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Applicant : Wohlstadter
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For : **MULTI-ARRAY, MULTI-SPECIFIC
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06/02/1998 SLUANG 00000039 08611804 Examiner's attention is hereby directed to the
01 FC:126 240.00 DP following documents:

U.S. PATENT DOCUMENTS:

1. 4,280,815 07/28/81 Oberhardt et al.
2. 4,652,333 3/24/87 Carney.
3. 4,663,230 5/5/87 Tennent.

4. 4,826,759 5/2/89 Guire et al.
5. 4,891,321 1/2/90 Hubscher.
6. 5,061,445 10/29/91 Zoski et al.
7. 5,068,088 11/26/91 Hall et al.
8. 5,093,268 3/3/92 Leventis et al.
9. 5,098,771 3/24/92 Friend.
10. 5,110,693 5/5/92 Friend et al.
11. 5,124,075 6/23/92 Yasada et al.
12. 5,147,806 9/15/92 Kamin et al.
13. 5,165,909 11/24/92 Tennent et al.
14. 5,171,560 12/15/92 Tennent.
15. 5,189,549 2/23/93 Leventis et al.
16. 5,194,133 3/16/93 Cluck et al.
17. 5,221,605 6/22/93 Bard et al.
18. 5,238,808 8/24/93 Bard et al.
19. 5,240,863 8/31/93 Shibue et al.
20. 5,247,243 9/21/93 Hall et al.
21. 5,296,191 3/22/94 Hall et al.
22. 5,304,326 4/19/94 Goto et al.
23. 5,310,687 5/10/94 Bard et al.
24. 5,324,457 1/28/94 Zhang et al.
25. 5,340,716 8/23/94 Ullman et al.
26. 5,418,171 5/23/95 Kimura et al.

- 27. 5,466,416 11/14/95 Ghaed et al.
- 28. 5,468,606 11/21/95 Bogart et al.
- 29. 5,492,840 2/20/96 Malmqvist.
- 30. 5,632,957 5/27/97 Heller et al.

FOREIGN PATENT DOCUMENTS:

- 31. WO 92/14139 8/20/92 WO
- 32. WO 96/06946 3/7/96 WO
- 33. WO 90/14221 11/29/90 WO
- 34. WO 90/05301 5/17/90 WO

PUBLICATIONS:

35. Abbott and Whitesides, 1994, "Potential-Dependent Wetting of Aqueous Solutions on Self-Assembled Monolayers Formed from 15-(ferrocenylcarbonyl) pentadecanethiol on Gold, Langmuir 10: 1493-1497.

36. Abbott et al., 1992, "Manipulation of the Wettability of Surfaces on the 0.1 - to 1- μ m Scale Through Micromatching and Molecular Self-Assembly", Science 257: 1380-1382.

37. Abbott et al., 1994, "Using Micromachining, Molecular Self-Assembly, and Wet Etching to Fabricate 0.1-1 μ m-Scale Structures of Gold and Silicon", Chemistry of Materials 6: 596-602.

38. Adalsteinsson et al., 1979, "Preparation and Magnetic Filtration of Polyacrylamide Gels Containing Covalently Immobilized Proteins and a Ferrofluid" J. Mol. Catal. 6: 199-225.

39. Bain and Whitesides, 1989, "Modeling Organic Surfaces with Self-Assembled Monolayers", Angew. Chem. 101: 522-528.

40. Bains, 1992, "Setting a Sequence to Sequence a Sequence", Bio/Technology 10: 757-758.

41. Chaudhury and Whitesides, 1992, "How to Make Water Run Uphill", Science 256: 1539-1541.

42. Chaudhury and Whitesides, 1992, "Correlation between Surface Free Energy and Surface Constitution", Science 255: 1230-1232.

43. Deaver, D.R., 1995, "A New Non-Isotopic Detection System for Immunoassay", Nature 377: 758-760.

44. DiMillia et al., 1994, "Wetting and Protein Adsorption of Self-Assembled (sic) Monolayers of Alkanethiolates Supported on Transparent Films of Gold," Journal of the American Chemical Society 116: 2225-2226.

45. Dresselhaus, M.S.; Dresselhaus, G.; Eklund, P.C.; "Science of Fullerines and Carbon Nanotubes", Academic Press, San Diego, CA 1996.

46. Ferguson et al., 1993, "Monolayers on Disordered Substrates: Self-Assembly of Alkyldichlorosilanes on Surface-Modified Polyethylene and Polydimethylsiloxane", Macromolecules 26: 5870-5875.
47. Ferguson et al., 1991, "Contact Adhesion of Thin Gold Films on Elastomeric Supports: Cold Welding Under Ambient Conditions", Science 253: 776-778.
48. Gershon & Khilko, 1995, "Stable Chelating Linkage for Reversible Immobilization of Oligohistidine Tagged Proteins in the Biacore Surface Plasmon Resonance Detector", J. of Immunol. Methods: 65-76.
49. Haapakka, 1982, "The Mechanism of the Cobalt(II) - Catalyzed Electrogenenerated Chemiluminescence of Luminol in Aqueous Alkaline Solution", Anal. Chim Acta 141:263-268.
50. Haneko, 1987, Liquid Crystal TV Displays, Principles & Applications of Liquid Crystal Displays, KTK Scientific Publishers, Tokyo, D. Reidel Publishing.
51. Hickman et al., 1991, "Molecular Self-Assembly of Two-Terminal Voltametric Microsensors with Internal References", Science 252: 688-691.
52. Hydrogels in Medicine and Pharmacy, Vol. I-III; Peppas, N.A. Edition, CRC Press, Boca Raton, Florida, 1987.

53. Itaya & Bard, 1978, "Chemically Modified Polymer Electrodes: Synthetic Approach Employing Poly(methacryl chloride) Anchors", Anal. Chem. 50(11): 1487-1489.

54. Kaneko, 1987, Liquid Crystal TV Displays: Principles and Applicants of Liquid Crystal Displays (KTK Scientific Publishers, Tokyo; D. Reidel Publishing Company, Dordrecht) Chapter 2: 3-32.

55. Kim et al., 1995, "Polymer Microstructures Formed by Moulding in Capillaries", Nature 376: 581-584.

56. Knight et al., 1994, "Occurrence, Mechanisms and Analytical Applications of Electrogenenerated Chemiluminescence", Analyst, 119: 879-890.

57. Kumar and Whitesides, 1993, "Features of gold having micrometer to centimeter dimensions can be formed through a combination of stamping with an elastomeric stamp and an alkanethiol 'ink' followed by chemical etching", Appl. Phys. Lett. 63: 2002-2004.

58. Kumar et al., 1994, "Patterning Self-Assembled Monolayers: Applications in Materials Science", Langmuir 10: 1498-1511.

59. Laibinis et al., 1989, "Orthogonal Self-Assembled Monolayers: Alkanethiols on Gold and Alkane Carboxylic Acids on Alumina", Science 245: 845-847.

60. Leland and Powell, 1990, "Electrogenerated Chemiluminescence: An Oxidative-Reduction Type ECL Reaction Sequence Using Tripropyl Amine", J. Electrochem. Soc. 137: 3127-3131.

61. Martin and Nieman, 1993, "Glucose quantitation using an immobilized glucose dehydrogenase enzyme reactor and a tris(2,2'-bipyridyl) ruthenium (ii) chemiluminescent sensor" Analytica Chimica Acta 281: 475-481.

62. "Methods in Enzymology, Immobilized Enzymes & Cells, Pt. B.," Morback, K. Ed., Elsevier Applied Science: London, 1988.

63. Nielsen, P.E., 1995, "DNA Analogues With Nonphosphodiester Backbones", Annu. Rev. Biophys. Biomol. Struct. 24: 167-183.

64. Obeng et al., 1991, "Electrogenerated Chemiluminescence. 53. Electrochemistry and Emission from Adsorbed Monolayers of a Tris(bipyridyl)ruthenium(II)-Based Surfactant on Gold and Tin Oxide Electrodes", Langmuir 7: 195-201.

65. Olah et al., 1980, "Polymer Films on Electrodes. 4. Nafion-Coated Electrodes and Electrogenerated Chemiluminescence of Surface-Attached $\text{Ru}(\text{bpy})_3^{2+}$ ", J. Am. Chem. Soc. 102: 6641-6642.

66. Pale-Grosdemange et al., 1991, "Formation of Self-Assembled Monolayers by Chemisorption of Derivatives of Oligo (ethylene Glycol) of Structure HS (CH₂)₁₁(OCH₂CH₂)_m OH on Gold" Journal of the American Chemical Society **113**: 12-20.

67. Pollack et al., 1980, "Enzyme Immobilization by Condensation Copolymerization into Cross-Linked Polyacrylamide Gels", J. Am. Chem. Soc. **102**(20): 6324-36.

68. Polyethylene glycol chemistry: Biotechnical & Biomedical Applications, Harris, T.M. Ed., 1992 Plinun Press.

69. Prime and Whitesides, 1993, "Adsorption of Proteins Onto Surfaces Containing End-Attached Oligo (ethylene oxide): A Model System Using Self-Assembled Monolayers" J. Amer. Chem. Soc. **115**: 10714-721.

70. Prime and Whitesides, 1991, "Self-Assembled Organic Monolayers; Model Systems for Studying Adsorption of Proteins at Surfaces", Science **252**: 1164-1167.

71. Sassenfeld, 1990, "Engineering Proteins for Purification", TIBTECH **8**: 88-93.

72. Soane, D.S., Polymer Applications for Biotechnology: Soane, D.S. editor, Simon & Schuster, Englewood Cliffs, NJ.

73. "Solid Phase Biochemistry: Analytical & Synethic Aspects" Souten, W.H., Ed., T. Wiley & Sons: NY, 1983.

74. Spinke et al., 1993, "Molecular Recognition at Self-Assembled Monolayers: Optimization of surface functionalization", J. Chem. Phys. 99: 7012-7019.

75. Spinke et al., 1993, "Molecular Recognition at Self-Assembled Monolayers: The Construction of Multicomponent Multilayers", Langmuir 9: 1821-1825.

76. Strezoska et al., 1991, "DNA sequencing by hybridization: 100 bases read by a non-gel based method", Proc. Natl. Acad. Sci. USA 88: 10089-10093.

77. Sundberg et al., 1995, "Spatially-Addressable Immobilization of Macromolecules on Solid Supports", J. Am. Chem. Soc. 117: 12050-12057.

78. Tampion, J. and Tampion, M.D. "Immobilized Cells: Principles & Applications", Cambridge Univ. Press, NY 1987.

79. Wilber, et al., 1995, "Scanning Force Microscopies Can Image Patterned Self-Assembled Monolayers", Langmuir 11: 825-831.

80. Xu et al., 1994, "Electrogenerated Chemiluminescence. 55. Emission from Adsorbed $\text{Ru}(\text{bpy})_3^{2+}$ on Graphite, Platinum, and Gold", Langmuir 10: 2409-2414.

81. Yang, H.J. et al., 1994, "Electrochemiluminescence: A New Diagnostic and Research Tool", BioTechnology 12: 193-194.

82. Zhang et al., 1988, "Electrogenerated Chemiluminescent Emission from an Organized (L-B) Monolayer of a Ru(bpy)₃²⁺-Based Surfactant on Semiconductor and Metal Electrodes" J. Phys. Chem. 92: 55665569.

REMARKS

Each of the documents cited by Applicant is submitted herewith.

We have enclosed a copy of the Form PTO-1449, in duplicate, which is considered part of this Information Disclosure Statement.

We have also enclosed a check for \$240.00 in payment of the fee set forth in §1.17(p) for consideration of an Information Disclosure Statement filed more than three months after the filing date, after a first Action and after three months from learning of the information, in accordance with 37 C.F.R. §1.97(c).

This Information Disclosure Statement is not a representation that the documents cited herein are considered most pertinent, or that a search has been undertaken, or that the cited documents are indeed prior art. The Examiner is invited to undertake an independent search.

Applicant respectfully requests that the Examiner consider and make of record the documents cited herein and that a

copy of the Form PTO-1449, appropriately initialed by the Examiner, be returned to Applicant's attorney.

A Notice of Allowance is earnestly solicited.

Please charge any additional fees to Deposit Account No. 50-0297.

Respectfully submitted,

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